Sewage Treatment Plant Pollution Prevention: A Model for Lake Erie

Presentation to:
Binational Toxic Strategy
Mercury Workgroup
Windsor, ON
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Introduction

- About the Delta Institute
- Project Overview
- City of Solon Case Study
- Overcoming Barriers
- Challenge Questions

About the Delta Institute…

- About the Delta Institute
  - *We engage in the policy and practice of improving environmental quality and promoting community and economic development in the Great Lakes basin. In doing so, we contribute to the development of sustainable communities.*
- Current Work
  - Pollution Prevention
    - **Clean Air Counts**
    - **Industrial Boilers Energy Efficiency**
    - **Cumulative Risk Initiative**
    - **Lake Calumet Ecosystem Partnership Pollution Prevention**
  - Lakewide Management Plans (LaMPs)
    - **Lake Erie Binational Public Forum**
    - **Lake Michigan Public Forum**

Partner Sewage Treatment Plant Reduction Programs Include:

- Source identification
- Sector specific mercury reduction strategies for dischargers
- Search for mercury use at treatment plant
- Mercury reduction education for the general public, health professionals, teachers, lab personnel etc.
- Collection program
- Other ?

Mercury Reduction Strategies- One size does not fit all….

- Dentists
  - Education—many dentists are receptive
  - Partner with dental associations
  - Focus on dental assistants
  - Cooperative amalgam recycling programs
  - Bulk mercury collection programs
  - Amalgam removal equipment
- Households
  - Newsletters, flyers, bill inserts
  - HHW collection programs
  - Thermometer exchanges
- Schools
  - Hg curriculum
  - pledge program
  - bounty program
  - sending the message home
- Medical Facilities
  - Work with ESH staff
  - Hg workshops for medical professionals
  - Outreach to smaller facilities and nursing homes
  - Pledge programs
  - Thermometer exchanges
- Industry
  - P2 assessment
  - Procurement
  - BMPs

Why Sewage Treatment Plants?

By the Numbers…

- ✂Annual avg. Sewage Treatment Plant influent Hg— 106-323 ng/L (AMSA)
- Annual avg. Sewage Treatment Plant effluent Hg— 3-9 ng/L (AMSA)
- Median Sewage Treatment Plant sludge (average of last 5 years)— 1.7 ppm (Wis)

City of Solon- Case Study

- Population of approximately 22,000
- Approximately 200 lbs per person of mercury in use in the City of Solon
- Sewage Treatment Plant flow less than 10 MGD
- 3 SIUs that use mercury and 25 dentists
- Approximately 4 to 38 lbs/year of mercury can potentially reach the Sewage Treatment Plant
- 2/3 of controllable mercury to the City of Solon Sewage Treatment Plant is from dentists offices- approx. 2.7 lbs/year.
- Sewage Treatment Plant has applied for a variance to their NPDES permit- variance limit is 12 ng/l
- Solon Plan of Study has been approved by Ohio EPA

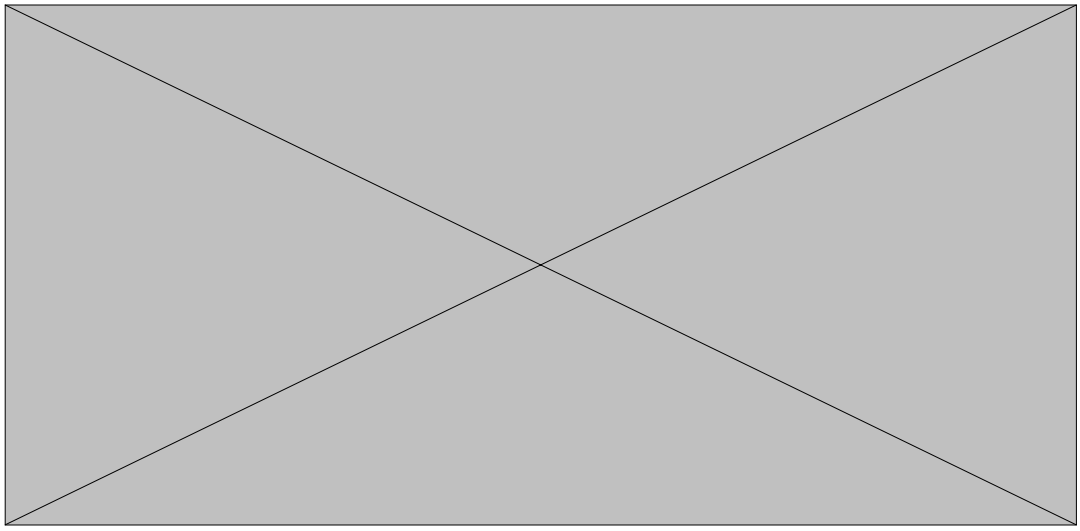
City of Solon- Influent and Effluent Mercury Concentration

- Influent
  - Year 2001 avg = 219.5 ng/l
  - Year 2002 average = 117 ng/l
- Effluent
  - Year 2001 avg = 27 ng/l
  - Year 2002 average = 4 ng/l
  - Regulatory limit = 1.3 ng/l

City of Solon- Potential Sources of Mercury

Source	Mercury (lb/yr)
Batteries	*0.31*
Dental	**2.69**
Fluorescent Lamps	***2.35***
Hospitals/clinics	**< 0.01**
General Industry	**0.37**
Motor Vehicle Combustion	1.10
Switches- appliances, autos, lights	*1.8*
Thermostats	*0.98*
Veterinary	**< 0.01**
Thermometers	*1.9*
Coal Combustion	26.84
Controlled at the Plant	**3.08**
Controlled in the Community	*7.34*
Not Controlled	27.94

City of Solon- Case Study



City of Solon- Regulatory Approach

- Update local ordinance to include provisions for narrative BMPs
- Work with the Delta Institute to develop a community mercury reduction program that includes outreach to dischargers to the Sewage Treatment Plants, users of mercury containing devices (e.g. schools and hosptials), and residences
- Engaged the local and state dental association early in this process to obtain feedback and buy-in.
- Two pronged approach-
  - Allow BMPs (no separators) but will require yearly inspections and additional paperwork
  - Install separators and no inspections and minimal paperwork

City of Solon- Expected Outcomes

- Reduce mercury to the Sewage Treatment Plant by 80% and meet variance limit of 12 ng/l.
- Installing amalgam separators are expected to enable the Sewage Treatment Plant to meet the 1.3 ng/l limit.
- Improved mercury handling practices and reduced use of mercury containing devices within local industry
- Eliminate up to 7 pounds of mercury from the community.
- Increase awareness of mercury issues in the community

City of Solon- Implementation Barriers

- Local dental associations
- Lack of information and education
- New technology
- Lack of political will to utilize authority
- Local champion

City of Solon- Overcoming barriers

- Work closely with local dental associations to educate and outreach
  - Develop a good working relationship at the start of the regulatory process
  - Identify similar goals and areas of potential conflict early in the process
  - Utilize the resources of the local dental association as the primary source of education and outreach to dentists
- Develop incentives that promote amalgam separators
  - Awareness and outreach
  - Spec equipment
  - Purchasing
  - Installation
  - Maintenance
  - Regulatory

Challenge Questions

- How can we work more closely with the dental associations?
- Status of ADA and USEPA negotiations?
- Lessons learned from the Canadian model.